

REMARKS

This Amendment is responsive to the Office Action dated March 17, 2003. In this Amendment, Applicants have amended claims 1, 15, and 23 and added claims 37-39.

Claim Objections

In the Office Action, the Examiner objected to the numbering of various claims and corrected the numbering in the body of the Office Action. Applicants have adopted the Examiner's numbering in this Amendment.

Claim Rejection Under 35 U.S.C. § 112, first paragraph

In the Office Action, the Examiner rejected claims 13, 22, and 35 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In support of the rejection under section 112, first paragraph, the Examiner stated:

Applicant is claiming an [sic] estimating a gamma and gray balance, but the range of values of gamma and gray balance are not specified clearly in the specification. The estimation program should be included in this application.

Applicants traverse this rejection.

As required by 35 U.S.C. 112, first paragraph, Applicants must provide a disclosure sufficient to enable one skilled in the art to make and use the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 27 USPQ2d 1510 (Fed. Cir. 1993). Applicants' disclosure clearly meets this requirement.

Claims 13, 22, and 35 require estimation of gamma and gray balance for a display device. The range of values of gamma and gray balance will vary according to the characteristics of a particular display device. Hence, claims 13, 22 and 35 appropriately refer to "estimation" of the gamma and gray balance parameters. The Examiner's suggestion that the specification must describe a "range of values of gamma and gray balance" is clearly misplaced, particularly in view of the variation described above. Applicants' disclosure does not concern a display device with a particular range of gamma and gray balance. Rather, Applicants' disclosure correctly describes techniques for estimating gamma and gray balance for a variety of display devices.

With respect to FIG. 8, for example, Applicants' disclosure describes in detail exemplary processes for estimating both gamma and gray balance. For example, an exemplary process for estimation of gamma is discussed in detail at page 32, line 4, to page 35, line 4, and in conjunction with FIGS. 8-10. Applicants' disclosure describes estimation of a coarse gamma, e.g., using the equation at page 33, line 25, followed by estimation of a fine gamma, e.g., using the equation at page 34, line 31. Likewise, an exemplary process for estimation of gray balance is discussed in detail at page 35, line 5, to page 36, line 6. The disclosure further describes the gray balance estimation at page 36, line 7, to page 38, line 6, with respect to FIG. 11, e.g., using the estimated fine gamma.

Given Applicants' detailed description of exemplary processes for estimating gamma and gray balance, one of ordinary skill in the art would have no difficulty making and using the invention, as claimed. The Examiner's reference to a "range of values" does not seem to stem from the enablement requirements of 35 U.S.C. 112, first paragraph. Accordingly, the rejection of claim 13, 22, and 35 for lack of enablement is misplaced, and must be withdrawn.

The Examiner's further assertion that "the estimation program should be included in this application" is similarly misplaced. Again, for purposes of the enablement requirement, Applicants' disclosure must be sufficient to enable others to make and use the claimed invention. There is no provision in section 112, first paragraph, or any other authority, that would require submission of a software program for implementation of the invention, provided the disclosure is otherwise enabling.

Given the ample details disclosed by Applicants concerning gamma and gray balance estimation, it is difficult to imagine how one skilled in the art of color imaging would require undue experimentation to arrive at an implementation of the claimed invention. The Examiner has failed to establish that implementation of the claimed invention would require anything more than routine effort on the part of one skilled in the art. Therefore, once again, the rejection of claim 13, 22, and 35 for lack of enablement is misplaced, and must be withdrawn.

The Examiner also stated, in support of the rejection, that:

Since the invention is about "color image display accuracy using comparison of complex shapes to reference background" the following questions need to be responded: What are the differences between "the range of values of gamma" and "gray balance" and "system or display?"

The Examiner cited no support or authority that would require Applicants to respond to the nebulous questions posed in the Office Action. In terms of what "the invention is about," Applicants suggest that the Examiner focus on the specific requirements of the claims. Further, to the extent they are at issue, the "differences" questioned by the Examiner appear to be self-evident. The meanings of the terms "gamma" and "gray balance" are well known to those skilled in the art of color imaging. Gamma generally refers to a parameter that indicates the rate of change in light intensity with change in a digital device value. Gray balance provides an indication of the amount of color shift of a neutral gray toward one or more of the color channels used by the display device, e.g., red, green, and blue.

Notwithstanding the appreciation in the art of the differences between gamma and gray balance, it is unclear how such differences would have any bearing on the enablement requirements of 35 U.S.C. 112, first paragraph. Therefore, Applicants submit that the rejection is erroneous and must be withdrawn.

Claim Rejection Under 35 U.S.C. § 112, second paragraph

In the Office Action, the Examiner rejected claims 1, 12, 15, 20, 23 and 35 under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. In support of the rejection, the Examiner stated:

The omitted elements are: The non-rectangular shape limitation is considered to be unnecessary since the specification, as filed, did not describe the tapered shape as essential or critical to the operation or patentability of the claim.

Applicants traverse this rejection.

First of all, it is difficult for Applicants to comprehend the basis of the Examiner's rejection. On one hand, the Examiner cited MPEP 2172, which prohibits omission of essential elements from the claims, either from an enablement standpoint under section 112, first paragraph or a clarity standpoint under section 112, second paragraph. Apparently, the Examiner is concerned with the clarity aspect. On the other hand, the Examiner identifies the "non-rectangular shape limitation" as an omitted element.

Without admitting that this feature is "essential," Applicants point out that it is nevertheless clearly recited in the claims. Claims 1, 15 and 23, for example, each require the

display of a sequence of dark elements against a black background, wherein each of the dark elements has a different gray value and a non-rectangular shape. Accordingly, it is difficult to understand the Examiner's concern.

Moreover, in contradiction to his characterization of the non-rectangular shape as an essential element, the Examiner inexplicably stated that the "non-rectangular shape limitation is considered to be unnecessary" (emphasis added). In particular, the Examiner stated that "the specification, as filed, did not describe the tapered shape as essential or critical to the operation or patentability of the claim."

Applicants are at a loss in understanding the Examiner's position. Neither the specification nor the claims makes any particular reference to a "tapered shape," although such a shape would certainly be non-rectangular in accordance with the claims.

Applicants respectfully request that the Examiner clarify his position concerning the perceived omission of essential elements. Applicants' disclosure makes no mention of the criticality of any particular feature, but rather describes a number of exemplary and non-limiting embodiments of the claimed invention. Applicants submit that the rejection under 35 U.S.C. 112, second paragraph, is misplaced, and must be withdrawn.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1-12, 14-21, 23-34 and 36 under 35 U.S.C. 103(a) as being unpatentable over Hill et al. in view of Engeldrum et al. Applicants traverse this rejection. The applied references fail to disclose or suggest the inventions defined by Applicants' claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

In support of the rejection, the Examiner provided little analysis of the Hill et al. reference relative to the requirements set forth in Applicants' claims. For example, the Examiner failed to identify any feature within Hill et al. that corresponds to the display of a sequence of dark elements against a black background, wherein each of the dark elements has a different gray value and a non-rectangular shape, as defined by Applicants' claims. The Examiner also did not explain how Hill et al. could have suggested estimating a blackpoint for a display device based on one of the dark elements selected by the user that is visible and appears to most closely match the background, as further claimed.

On the contrary, the Examiner seemed to cite Hill et al. merely for what it does not disclose, stating only that "Hill et al. does [sic] not explicitly specify a sequence of dark elements against a black background, wherein each of the dark elements has a different gray value." If Hill et al. discloses none of the features above, it is difficult to understand why the Examiner cited this reference. What does Hill et al. have to offer one of ordinary skill in the art relative to the claimed invention? In contrast to the claimed invention, which requires estimation of a blackpoint for a display device based on a sequence of non-rectangular dark elements, Hill et al. is directed to a display device itself and methods for displaying images on the display device. Hill et al. appears to make no mention of blackpoint estimation.

Even if Hill et al. were somehow relevant to the claimed invention, it is unclear how Hill et al. and Engeldrum et al. fit together. Moreover, even if Hill et al. were somehow modified in light of the Engeldrum et al. teachings, the result would not be the claimed invention. Engeldrum et al. describes a technique for estimating the blackpoint of a display device. In this respect, Engeldrum et al. actually bears some relevance to the claimed invention. However, Engeldrum et al. represents nothing more than the state of the art prior to Applicants' claimed invention. In particular, Engeldrum et al. discloses the display of rectangular patches for blackpoint estimation. Of course, this teaching is entirely at odds with the claimed invention, which requires the display of a sequence of non-rectangular dark elements.

Notably, as a motivation to modify the Hill et al. system in view of the Engeldrum et al. teachings, the Examiner reasoned that one of ordinary skill in the art would have found it desirable to improve the Hill et al. system for the display of "other graphics, geometric shapes, e.g., circles, squares, etc., and captured images such as photographs, accurately and clearly." The manner in which the Engeldrum et al. teachings would benefit enhanced display of geometric shapes in the Hill et al. system escapes Applicants. Engeldrum et al. provides no teaching of such an advantage. Again, Engeldrum et al. is concerned with blackpoint estimation as part of a color characterization process. Rather, this motivation appears to be a mere contrivance with the benefit of hindsight in view of Applicants' own disclosure.

In summary, to the best of Applicants' understanding, Hill et al. is wholly irrelevant to the claimed invention, while Engeldrum et al. highlights the fundamental differences between the prior art and the claimed invention. Neither Hill et al. nor Engeldrum et al. provides any suggestion of the desirability of non-rectangular dark elements, as claimed, for blackpoint

estimation. Accordingly, those references fail to support a prima facie case of obviousness. Applicants request withdrawal of the rejection under section 103.

In view of the substantial differences identified above with respect to independent claims 1, 15 and 23, Applicants reserve comment concerning the many additional features set forth in the dependent claims and lacking from the applied references, and neither admit nor acquiesce in the grounds of rejections advanced by the Examiner against those claims.

CONCLUSION

All claims in this application are in condition for allowance. Applicants respectfully request reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Date:

6-17-03

By:



Name: Steven J. Shumaker
Reg. No.: 36,275

SHUMAKER & SIEFFERT, P.A.
8425 Seasons Parkway, Suite 105
St. Paul, Minnesota 55125
Telephone: 651.735.1100
Facsimile: 651.735.1102